Appendix E: Pipe Inspection Tools

Technology Name	Technology Description	Pipe dia. (small/ largest)	Capital Cost	Cost/ Pipe	Vendor Information	Deployment Information
Pipe Crawler System	The pipe crawler consists of a visual inspection system (high-resolution micro color camera with lightheads, a monitor, and a video recorder) along with a distance encoder and a variety of radiological detectors coupled to a data-logging ratemeter-scaler. The crawler/detector system is capable of negiotiating 90 degree turns, can quantify piping surface contamination levels and pinoint locations where contamination exists.See DOE/EM-0355.	1.5"/ 24"	Variable, dependent on size of piping, capabilities included	Variable, scope dependent	Radiological Services Inc. 31 Shaw St., New London, CT 06320 Jim McCleer 860-443-4944; 860-444-6110 (fax)	Shoreham Decommissioning; Fernald Plant 1 (demo); Argonne CP-5 (large scale demo);B&W Parks Township Facility, PA; McDermott Technology, Alliance, OH.
Pipe BTX-II System	The BXT-II system incorporates a high-resolution micro color camera with lightheads, cablings, a monitor, and a video recorder. The system is well suited for inspecting the interior of most types of piping and other small, confined areas.	1.4"/ 24"	$5,399.00	$43.31	Visual Inspection Technologies	Fernald Plant 1
Pipe Explorer Surveying System	The Pipe Explorer system uses a pneumatically operated airtight tubular membrane to tow radiation detectors and video cameras into pipes. It can be used to move a characterization tool forward and backward through a pipe as the tool's output and position are continuously recorded, providing detailedd characterization of the location, visual appearance, and quantity of radioactive contamination in pipes.	2"/ 40"			Science and Engineering Associates, Inc.	Argonne Site, FUSRAP Site in Adrian and Grand Junction Project in Colorado
Vector Magnetometry (VM) Sensor for Internal Inspection Systems	A pipe inspection package to detect corrosion defects in "live" ferrous pipe. The basic components are a VM sensor and push-rod for propulsion		$35,000 – 65,000.		Federal Energy Regulatory Commission	TDW facility
VersaTrax 150	The VersaTrax 150 is a modular, long range internal pipe inspection system capable of operation within a variety of pipe sizes the vehicle is steerable, allowing it to easily maneuver through bends and joints. With the addition of a scissors hoist, the video camera can be remotely raised to a height of 106 cm/42 inches, making the system ideal for large diameter pipe applications.	15cm/ 6"			Inuktun Services Ltd. info@inuktun.com Headquarters Inuktun Services Ltd. 2569 Kenworth Road, Suite C Nanaimo, BC, Canada V9T 3M4 Phone: (250) 729 8080 Toll Free: 1 877 468 5886 Fax: (250) 729 8077	

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Technology Name	Technology Description	Pipe dia. (small/ largest)	Capital Cost	Cost/ Pipe	Vendor Information	Deployment Information
VersaTrax 100	Based on the compact and powerful MicroTrac crawler units, is the best choice for intenal inspection of small diameter pipe.	10cm/ 4"			Inuktun Services Ltd. info@inuktun.com Headquarters Inuktun Services Ltd. 2569 Kenworth Road, Suite C Nanaimo, BC, Canada V9T 3M4 Phone: (250) 729 8080 Toll Free: 1 877 468 5886 Fax: (250) 729 8077	
VersaTrax Vertical	This vehicle is capable of both horizontal and vertical travel in pipes. The intuitive control system provides steering capability, allowing the vehicle to negotiate pipe bends and joints. Sensors on the vehicle provide continuous feedback of the pipe size and outward force of the MicroTracs.	20cm/ 12"			Inuktun Services Ltd. info@inuktun.com Headquarters Inuktun Services Ltd. 2569 Kenworth Road, Suite C Nanaimo, BC, Canada V9T 3M4 Phone: (250) 729 8080 Toll Free: 1 877 468 5886 Fax: (250) 729 8077	
Pan & Tilt Camera System For Pipes And Borehole	These unique cameras allow the operator to point the camera and lighting assembly at the area to be inspected. This provides very detailed inspection of interior pipe walls, borehole and drilled shaft walls, or any other confined area.	3/8"/ 1200"			R&R Visual, Inc. 1828 West Olson Road Rochester, IN 46975 Phone: (574)223-5426 Fax: (574)223-7953 info@rapidview.com	
Robotic Transports For Pipeline And Cavities	Most pipeline robotics are wheeled tractors with variable speed controllers. Small cavity inspection can be completed using a rubber tracked robot capable of changing geometry to negotiate obstacles.	3/8"/ 1200"			R&R Visual, Inc. 1828 West Olson Road Rochester, IN 46975 Toll Free: (800) 776-5653 Phone: (574)223-5426 Fax: (574)223-7953 Information: info@rapidview.com Support: support@rapidview.com	

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Technology Name	Technology Description	Pipe dia. (small/ largest)	Capital Cost	Cost/ Pipe	Vendor Information	Deployment Information
Video Boroscopes	For those smaller areas, we utilize video boroscopes with high quality imaging chips and articulating head. These miniature cameras have self contained light sources to illuminate and image small pipelines, cavities, and internal working of machinery.	6mm/ 3"			R&R Visual, Inc. 1828 West Olson Road Rochester, IN 46975 Phone: (574)223-5426 Fax: (574)223-7953 info@rapidview.com	
Push Rod Cameras For Small Diameter Pipelines And Boreholes	Push propelled camera are used to inspect small diameter pipelines with extended distances. Common uses are sewers, water pipelines, electrical conduits, boreholes, and many others. A unique feature is the self uprighting camera. This allows the picture to always stay upright on the screen even if the camera flips over. This prevents confusion when viewing later.	2"/ 500ft			R&R Visual, Inc. 1828 West Olson Road Rochester, IN 46975 Phone: (574)223-5426 Fax: (574)223-7953 info@rapidview.com	
P455 TwinView Camera	Some of the outstanding features of thos state of the art camera are forward-view with automatic upright pictures, remote control for sicle rotate view, built in forward and side view LED lightheads, clock/counter clockwise side view rotation, stainless housing with gold rhodium sliprings and pogo contact, and water proffed to 11 bar.	3"/ 8"			Pearpoint, Inc. 72055 Corporate Way Thousand Palms CA 92276 USA Tel: 760.343.7350 Fax: 760.343.7351	Austeck 4/15 Lorraine Street, Peakhurst NSW 2210 Australia Ph: (02) 9584 2029 Fax: (02) 9584 3675
Deep Tunnel Inspection Camera System	The deep tunnel inspection camera is specifically built and utilized for inspection of very large diameter subsurface tunnels.	30 ft			R&R Visual, Inc. 1828 West Olson Road Rochester, IN 46975 Toll Free: (800) 776-5653 Phone: (574)223-5426 Fax: (574)223-7953 Information: info@rapidview.com Support: support@rapidview.com	
Flexiprobe ELS	The maneuverability of the camera allows it to navigate 90o bends in pipes of a diameter of 3" or greater. The camera is actuated by a pushwire and can be centered in a pipe through the use of available skids and brushes. An available tractor system, which can be used in pipes of diameters of 6" to 24", is available with lighting systems providing up to 200 watts of forward light.	2"/ 10"	$7,495.00		Pearpoint www.pearpoint.com Contact: Tom Schmandt Contact Phone Number: 760-343-7350 x231	Austeck 4/15 Lorraine Street, Peakhurst NSW 2210 Australia Ph: (02) 9584 2029 Fax: (02) 9584 3675

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Technology Name	Technology Description	Pipe dia. (small/ largest)	Capital Cost	Cost/ Pipe	Vendor Information	Deployment Information
Sonar Pipe Inspection Services	The equipment comprises an underwater scanning transducer (which may be skid, raft, or robotic tractor mounted), an sonar processor unit and a high-resolution color monitor. The sonar processor unit and monitor are small and rugged for the most demanding project sites				R&R Visual, Inc. 1828 West Olson Road Rochester, IN 46975 Toll Free: (800) 776-5653 Phone: (574)223-5426 Fax: (574)223-7953 Information: info@rapidview.com Support: support@rapidview.com	
Prototype Magnetostrictive Sensor Torsional Wave Probe	SwRI has developed a magnetostrictive sensor (MsS) technique and system for long-range guided wave inspection of piping for corrosion, particularly those pipes under insulation. The SwRI-patented technique involves launching a pulse of guided wave along the length of pipe and detecting signals reflected from defects at the position from which the original wave was launched	6"/ 16"			Soutwest Research Institute hkwun@swri.org com67@swri.org	
NaviTrack™	Gauge and audio signals guide you to the target area quickly and easily over long distances. Locates transmitter with pinpoint accuracy and maps direction of pipe. Locates energized lines and power lines.					
Laser Profilometry	Our flagship product, the LP-2000™ can be configured to support a wide variety of laser-based measurement and inspection applications. It integrates a multi-function laser diode power supply with a two-channel photodetector amplifier module. The laser driver module allows the system to either operate in CW mode, or in an innovative "Safe" mode, which automatically switches the laser diode into low-power pulse operation when no reflected signal is detected. The LP-2000™ provides the operator an incredible amount of flexibility, whether he is conducting simple laboratory tests or extensive field examinations. Examples of applications that the LP-2000™ will support include: Laser-based surface profilometry, Laser-scanned penetrant inspection, Alignment and straightness measurement, and Laser Video Imaging.		$60,000		Laser Techniques Co. 14508 NE 20th St. Bellevue, WA 98007-3713 USA Phone: (425) 641-4450 Fax: (425) 957-3554 E-mail: info@laser-ndt.com Web site: www.Laser-NDT.com	